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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/531,085	04/11/2005	Hiroto Tamaki	925-319	2113
23117 7590 01/28/2009 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203				
EXAMINER				
KOSLOW, CAROL M				
ART UNIT		PAPER NUMBER		
1793				
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/531,085

Applicant(s)

TAMAKI ET AL.

Examiner

C. Melissa Koslow

Art Unit

1793

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-32 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 26-31 is/are allowed.
- 6) ☒ Claim(s) 1-9, 14-25 and 32 is/are rejected.
- 7) ☒ Claim(s) 10-13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 December 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 12/24/08.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 18 December 2008 has been entered.

The drawings were received on 18 December 2008. These drawings are acceptable and thus the objections to the drawings is withdrawn. The amendments to the claims have overcome the 35 USC 112 rejection.

Claims 26-31 are allowable over the cited art of record.

Claims 10-13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

These claims are allowable over the cited art of record for the reasons given in the previous actions.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claims 1-3, 5, 6, 9, 14, 16, 18, 20, 24, 25 and 32 are rejected under 35 U.S.C. 102(e) as being anticipated by U.S. patent 6,717,353.

This reference teaches an oxynitride phosphor having the formula $(\text{Sr}_{1-a-b} \text{Ca}_b \text{Ba}_c) \text{Si}_x \text{N}_y \text{O}_z \text{:Eu}_a$, where a is 0.002-0.2, b is 0-0.25, c is 0-0.25, x is 1.5-2.5, y is 1.5-2.5 and z is 1.5-2.5. This is the same formula as claim 6 and thus the phosphor must have a rhombic lattice system, a weight ratio of nitrogen to oxygen that falls within that claimed and the luminescent

properties of claims 16 and 18, absent any showing to the contrary. Figure 1 should that the phosphor is excited by light having a wavelength of 490 or less. The amount of europium falls within that of claim 25 and thus it must have the property of claim 24. While the taught phosphor is produced by different process than that claimed, the resulting phosphors appear to be identical. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). The reference that the oxynitride phosphor emits green light. The reference teaches the claimed phosphor.

Claims 4, 7, 8, 15, 17, 19 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. patent 6,717,353.

As stated above, this reference teaches an oxynitride phosphor having the formula $(\text{Sr}_{1-a-b-c}\text{Ca}_b\text{Ba}_c)\text{Si}_x\text{N}_y\text{O}_z\text{:Eu}_a$, where a is 0.002-0.2, b is 0-0.25, c is 0-0.25, x is 1.5-2.5, y is 1.5-2.5 and z is 1.5-2.5. The amount of europium overlaps that claimed. The taught ranges of x , y and z encompass and overlaps those claimed. Product claims with numerical ranges which overlap prior art ranges were held to have been obvious under 35 USC 103. *In re Wertheim* 191 USPQ 90 (CCPA 1976); *In re Malagari* 182 USPQ 549 (CCPA 1974); *In re Fields* 134 USPQ 242 (CCPA 1962); *In re Nehrenberg* 126 USPQ 383 (CCPA 1960). The taught ratios of Sr to Ca, Sr to Ca and Ca to Ba overlap those claimed. When c is greater than 0, the reference suggests a Ba containing oxynitride and the resulting phosphor would be expected to have the luminescent

properties of claims 15, 17 and 19, absent any showing to the contrary. In addition, when c is greater than 0, the reference suggests the claimed device which would have a spectra that has peaks in the claimed ranges and a R_a that falls within the claimed range. The reference suggests the claimed phosphor.

The declaration filed on 18 December 2008 under 37 CFR 1.131 has been considered but is ineffective to overcome the reference.

The declaration shows that applicants reduced to practice the phosphor having the formulas $Ba_{0.97}Si_2O_2N_2:0.03Eu$, $(Sr,Ca)_{0.97}Si_2O_2N_2:0.03Eu$ where the molar ratio of Sr/Ca is 5/5 or 7/10, $Sr_{1-x}Si_2O_2N_2:xEu$ and $Ca_{1-x}Si_2O_2N_2:xEu$, where $0 < x \leq 0.15$ before 14 October 2002. This showing is not commensurate with the subject matter of claims 1-9, 14-25 and 32 and there is no showing that the difference between the claimed geneses and the disclosed species would have obvious to one of ordinary skill in the art in view of the 37 CFR 1.131 evidence. In addition, disclosed species in the declaration do not show that applicants had possession of the basic inventive concept, as defined by claims 1-9, 14-25 and 32, before 14 October 2002. See MPEP 715.02.

Furthermore, the reference teaches several species that fall within the claimed genus and are different from those in the declaration. Applicants have not shown that these species would have been obvious to one of ordinary skill in the art in view of the 37 CFR 1.131 evidence. See MPEP 715.03(I)(B) and (II). It is noted that the phosphor art is an unpredictable one and thus the showing the phosphors having the basic formula $MSi_2O_2N_2:Eu$ where M is Ba, Ca, Sr or Ca and Sr and where Eu is 15 mol% or less does not support the claimed geneses since one of ordinary skill in the art would not be able to predict what a change in M and/or the activator, or a change

in the amounts of any of the elements in the formula would do to the luminescent properties of the material. The rejection is maintained.

Once this applicants is in condition for allowance, an interference proceeding may be appropriate between this application and U.S. patent 7,351,356.

U.S. patent 7,351,356 has a foreign priority date, which was perfected during prosecution, of 24 September 2002. This date is before the date given in the 37 CFR 1.131 affidavit. The subject matter of claims 1-5, 12 and 13 of the patent are directed to a phosphor, which is excitable by wavelengths in the range of 380-470 nm, having the formula $MSi_2O_2N_2$, where M is at least one of Ca, Sr and Ba and the phosphor contains Eu as an activator. These claims teach that the M can be at least two of Ba, Ca and Sr or that M is $M'_{1-x}Zn_x$ where M' is at least one of Ba, Ca and Sr and $0 < x \leq 0.4$. These claims also teach that the activator can be $Eu_{1-y}Mn_y$, where y is 0-0.5. Claim 1 teaches the molar ratio of Ca to Eu is 1: 0.001 to 1:0.3. Claim 2 teaches the phosphor, when M is Ca, emits green light, which has a longer wavelength than the exciting UV-blue wavelength range. Thus the claims of this patent clearly teaches the subject matter of claims 1-3, 5-9, 14, 16 and 20-22 and suggests the subject matter of claims 4, 21-23 and 25 sin that the amount of the activators encompass and overlaps those claimed in this application and the claims suggests that M is $Ca_{1-x}Ba_x$, $Sr_{1-x}Ba_x$ and $Ca_{1-x}Sr_x$, where $0 < x < 1$ and thus teaches compositions that encompass those in claims 21-23.

While the reference does not teach the properties of claims 15, 17-19 and 24, the phosphor in the claims of the patent would be expected to inherently have these properties since it falls within the composition claimed in this application. The claims of the patent also teaches the phosphor of claim 32 of this application since the patented phosphors appear to be identical

to a phosphor resulting from the process of claim 26. Claim 32 is product-by-process claim. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Melissa Koslow whose telephone number is (571) 272-1371. The examiner can normally be reached on Monday-Friday from 8:00 AM to 3:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jerry Lorengo, can be reached at (571) 272-1233.

The fax number for all official communications is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/cmk/
January 28, 2009

/C. Melissa Koslow/
Primary Examiner
Art Unit 1793